

FORM PTO-1390  
(REV 5-93)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

**TRANSMITTAL LETTER TO THE UNITED STATES  
DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING  
A FILING UNDER 35 U.S.C. 371**

2202/50001

U.S. APPLICATION NO. (if known, see 37 CFR 1.5)

**09/856613**

INTERNATIONAL APPLICATION NO.  
PCT/FR99/02882

INTERNATIONAL FILING DATE  
23 November 1999

PRIORITY DATE CLAIMED  
24 November 1998

TITLE OF INVENTION

A MEMORY ACCESS PROTECTION DEVICE AND METHOD AND A FRANKING MACHINE EMPLOYING THEM

APPLICANT(S) FOR DO/EO/US

Jean-Marc DERY and Frederic L'HOTE

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371
3. ☒ This express request to begin national examination procedures (35 U.S.C. 371(f) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2)).
  - a. ☒ is transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☐ has been transmitted by the International Bureau
  - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US)
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
  - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☐ have been transmitted by the International Bureau.
  - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
  - d. ☒ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)) (executed)
10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

**Item 11. to 16. below concern other document(s) or information included:**

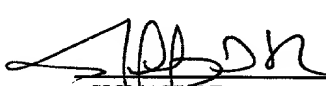
11. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A **FIRST** preliminary amendment.  
☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information:
  - a. 3 sheets of drawings showing Fig. 1-3;
  - b. International Search Report.



**23911**

PATENT TRADEMARK OFFICE

09/856613

U.S. APPLICATION NO. (if known, see 37 CFR 1.53) <b>09/856613</b>		INTERNATIONAL APPLICATION NO. PCT/FR99/02882		ATTORNEY'S DOCKET NUMBER 2202/50001	
17. <input checked="" type="checkbox"/> The following fees are submitted: Basic National Fee (37 CFR 1.492(a)(1)-(5)):  Search Report has been prepared by the EPO or JPO ..... \$860.00 International preliminary examination fee paid to USPTO (37 CFR 1.482) ... \$690.00 No international preliminary examination fee paid to USPTO (37 CFR 1.482)  but international search fee paid to USPTO (37 CFR 1.445(a)(2)) ..... \$710.00 Neither international preliminary examination fee (37 CFR 1.482) nor  international search fee (37 CFR 1.445(a)(2) paid to USPTO ..... \$ 1000.00 International preliminary examination fee paid to USPTO (37 CFR 1.482)  and all claims satisfied provisions of PCT Article 33(2)-(4) ..... \$100.00  <b>ENTER APPROPRIATE BASIC FEE AMOUNT =</b>				CALCULATIONS	PTO USE ONLY
				<b>\$860.00</b>	
Surcharge of \$130.00 for furnishing the oath or declaration later than [ ] 20 [ ] 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				\$	
Claims	Number Filed	Number Extra	Rate		
Total Claims	21 - 20 =	1	X \$18.00	\$ 18.00	
Independent Claims	2 - 3 =	0	X \$80.00	\$	
Multiple dependent claims(s) (if applicable)			+ \$270.00	\$	
<b>TOTAL OF ABOVE CALCULATIONS =</b>				<b>\$878.00</b>	
Applicant claims Small Entity Status (See 37 CFR §1.27) [ ] yes [ ] no.				\$	
Reduction by 1/2 for filing by small entity, if applicable.					
<b>SUBTOTAL =</b>				<b>\$878.00</b>	
Processing fee of \$130.00 for furnishing the English translation later than [ ] 20 [ ] 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				\$	
<b>TOTAL NATIONAL FEE =</b>				<b>\$878.00</b>	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28,3.31). \$40.00 per property +				\$ 40.00	
<b>TOTAL FEE ENCLOSED =</b>				<b>\$918.00</b>	
				Amount to be:	\$
				refunded	
				charged	\$
a. <input checked="" type="checkbox"/> Two checks in the amount of <u>\$878.00</u> for the filing fee and <u>\$40.00</u> for the assignment recording fee are enclosed. b. <input type="checkbox"/> Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed. c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees, which may be required, or credit any overpayment to Deposit Account No. <u>05-1323</u> . A duplicate copy of this sheet is enclosed.					
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.					
SEND ALL CORRESPONDENCE TO: Crowell & Moring, L.L.P., P.O. Box 14300 Washington, D.C. 20044-4300 Tel. No. (202) 628-8800 Fax No. (202) 628-8844				 SIGNATURE Jeffrey D. Sanok NAME 32,169 REGISTRATION NUMBER May 24, 2001 DATE JDS:pct	

09/856613 PCT/FR99/02882 2202/50001

Attorney Docket: 2202/50001  
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: JEAN-MARC DERY ET AL.

Serial No.: NOT YET ASSIGNED PCT NO.: PCT/FR99/02882

Filed: MAY 24, 2001

Title: A MEMORY ACCESS PROTECTION DEVICE AND METHOD  
AND A FRANKING MACHINE EMPLOYING THEM

PRELIMINARY AMENDMENT

Box PCT  
Commissioner for Patents  
Washington, D.C. 20231

Sir:

Please enter the following amendments to the specification,  
claims and abstract prior to the examination of the application.

IN THE SPECIFICATION:

Please amend the specification as follows:

Page 1, before the first full paragraph, insert the  
following heading:

--BACKGROUND AND SUMMARY OF THE INVENTION--.

Page 3, after the first full paragraph, insert the following  
heading:

--BRIEF DESCRIPTION OF THE DRAWINGS--.

Page 3, after the second full paragraph, insert the following heading:

--DETAILED DESCRIPTION OF THE DRAWINGS--.

IN THE CLAIMS:

Please amend claims 3-5 and 8-10 as follows:

(A copy of the marked-up version of amended claims are attached to this Preliminary Amendment).

3. (Amended) A protection method according to claim 1, characterized in that it includes an operation (302) of verifying the programming of the control registers at each break (301) triggered by a hardware break point allocated to protected data.

4. (Amended) A protection method according to claim 1, characterized in that it includes an operation (303) of verifying that the interrupt return address is in the authorized area of the program at each break (301) triggered by a hardware break point allocated to protected data.

5. (Amended) A protection method according to claim 2, characterized in that it includes an operation (305) of invoking an error manager if at least one verification operation (302, 303) gives a negative result.

Serial No.

8. (Amended) A protection device according to claim 6, characterized in that it includes means (106) for verifying the programming of the control registers.

9. (Amended) A protection device according to claim 6, characterized in that it includes means (106) for verifying that the interrupt return address is in the authorized area of the program.

10. (Amended) A protection device according to claim 6, characterized in that it includes means (106) for invoking an error manager if at least one verification means supplies a negative verification result.

Please add new claims 11-21 as follows:

--11. (New) A protection method according to claim 2, characterized in that it includes an operation (302) of verifying the programming of the control registers at each break (301) triggered by a hardware break point allocated to protected data.

12. (New) A protection method according to claim 2, characterized in that it includes an operation (303) of verifying that the interrupt return address is in the authorized area of

the program at each break (301) triggered by a hardware break point allocated to protected data.

13. (New) A protection method according to claim 3, characterized in that it includes an operation (303) of verifying that the interrupt return address is in the authorized area of the program at each break (301) triggered by a hardware break point allocated to protected data.

14. (New) A protection method according to claim 3, characterized in that it includes an operation (305) of invoking an error manager if at least one verification operation (302, 303) gives a negative result.

15. (New) A protection method according to claim 4, characterized in that it includes an operation (305) of invoking an error manager if at least one verification operation (302, 303) gives a negative result.

16. (New) A protection device according to claim 7, characterized in that it includes means (106) for verifying the programming of the control registers.

Serial No.

17. (New) A protection device according to claim 7, characterized in that it includes means (106) for verifying that the interrupt return address is in the authorized area of the program.

18. (New) A protection device according to claim 8, characterized in that it includes means (106) for verifying that the interrupt return address is in the authorized area of the program.

20. (Amended) A protection device according to claim 8, characterized in that it includes means (106) for invoking an error manager if at least one verification means supplies a negative verification result.

21. (Amended) A protection device according to claim 9, characterized in that it includes means (106) for invoking an error manager if at least one verification means supplies a negative verification result.--

Serial No.

IN THE ABSTRACT:

Please add an Abstract of the Disclosure submitted herewith  
on a separate page.

[illegible]



Serial No.

REMARKS

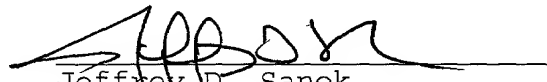
Entry of the amendments to the specification, claims and abstract before examination of the application is respectfully requested.

If there are any questions regarding this Preliminary Amendment or this application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

It is respectfully requested that, if necessary to effect a timely response, this paper be considered as a Petition for an Extension of Time sufficient to effect a timely response and shortages in other fees, be charged, or any overpayment in fees be credited, to the Account of Crowell & Moring, L.L.P., Deposit Account No. 05-1323 (Docket #2202/50001).

Respectfully submitted,

May 24, 2001

  
Jeffrey D. Sanok  
Registration No. 32,169

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JDS:pct

The invention concerns a method for protecting data in a device comprising a microprocessor having at least a debug register. The invention is characterized in that the method comprises an operation which consists in assigning a debug register to the data to be protected. Preferably, the inventive method comprises, for each break triggered by a debug register assigned to protected data, an operation for verifying validity of access.--

VERSION WITH MARKINGS TO SHOW CHANGES MADE

Please amend claims 3-5 and 8-10 as follows:

3. (Amended) A protection method according to claim 1 [or 2], characterized in that it includes an operation (302) of verifying the programming of the control registers at each break (301) triggered by a hardware break point allocated to protected data.

4. (Amended) A protection method according to [any of claims 1 to 3] claim 1, characterized in that it includes an operation (303) of verifying that the interrupt return address is in the authorized area of the program at each break (301) triggered by a hardware break point allocated to protected data.

5. (Amended) A protection method according to [any of claims 2 to 4] claim 2, characterized in that it includes an operation (305) of invoking an error manager if at least one verification operation (302, 303) gives a negative result.

8. (Amended) A protection device according to claim 6 [or 7], characterized in that it includes means (106) for verifying the programming of the control registers.

Serial No.

9. (Amended) A protection device according to [any of claims 6 to 8] claim 6, characterized in that it includes means (106) for verifying that the interrupt return address is in the authorized area of the program.

10. (Amended) A protection device according to [any of claims 6 to 9] claim 6, characterized in that it includes means (106) for invoking an error manager if at least one verification means supplies a negative verification result.

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JC18 Rec'd PCT/PTO 2 4 MAY 2001  
PCT/FR99/02882

1

"A memory access protection device and method and a  
franking machine employing them"

5 The present invention relates to a memory access  
protection device and method and a franking machine  
employing them.

10 It applies in particular to machines for detecting  
unauthorized writing of up-counters or down-counters of a  
franking machine which relate to sums of money. It also  
applies in particular to protecting a private key of an  
encryption or authentication method against reading and  
writing.

15 In a franking machine, certain counters (referred  
to as "postal counters") represent sums of money. In the  
prior art, no software protection against unauthorized  
access is provided.

Solutions entailing locking by means of an  
electronic card are complex and costly.

20 The present invention aims to remedy the above  
drawbacks.

To this end, the present invention aims to use  
resources of certain types of processor to protect data  
stored in certain protected memory areas. The processors  
in question are processors having a hardware break point  
25 (also known as a "debug register"). In accordance with the  
present invention, these hardware break points are  
programmed to control access to protected data.

A break point causes an interrupt to be generated  
each time a programmed memory address is accessed.

30 Accordingly, a first aspect of the present  
invention provides a method of protecting data in a device  
including a microprocessor having at least one hardware  
break point, characterized in that it includes an operation  
of allocating a break point to data to be protected.

35 Thanks to these features, an interrupt is generated

each time protected data is accessed.

Specific features of the method as succinctly described hereinabove include:

- an access validity verification operation at each  
5 break triggered by a hardware break point allocated to protected data,

- an operation of verifying the programming of the control registers at each break triggered by a hardware break point allocated to protected data,

10 - an operation of verifying that the interrupt return address is in the authorized area of the program at each break triggered by a hardware break point allocated to protected data, and/or

- an operation of invoking an error manager if at  
15 least one verification operation gives a negative result.

Thanks to each of the above features, implementing the present invention is particularly simple and effective.

A second aspect of the present invention provides a device for protecting data in a system including a  
20 microprocessor having at least one hardware break point, characterized in that it includes means for allocating a break point to data to be protected.

The invention also provides a franking machine characterized in that it includes a device as succinctly  
25 described hereinabove.

The invention also provides:

- means for storing information readable by a computer or a microprocessor storing instructions of a computer program, characterized in that it can execute the  
30 method according to the invention as succinctly described hereinabove, and

- partly or completely removable means for storing information readable by a computer or a microprocessor storing instructions of a computer program, characterized  
35 in that it enables to implement the method according to the

invention as succinctly described hereinabove.

The above device, the above franking machine and the above storage means have the same advantages as the method succinctly described hereinabove and are not described again here.

Other advantages, objects and features of the invention will emerge from the following description, which is given with reference to the accompanying drawings, in which:

- figure 1 shows a franking machine employing a protection device and method in accordance with the present invention,

- figure 2 is a diagram showing an electronic circuit incorporated in the franking machine shown in figure 1, and

- figure 3 is a flowchart of the operation of the device shown in figures 1 and 2.

The franking machine 1 shown in the drawings includes a device for printing a franking mark and an optional destination address of the envelope on a flat object such as a letter 2.

To print the franking mark in the standardized place provided for this purpose, the letter 2 must be passed through a corridor 5 in the machine 1 which is delimited by members fastened to the frame, respectively a sliding support 6 which forms the ceiling of the corridor 5, a table 7 which forms its floor, and a ramp which forms one of its lateral limits. The corridor is open at the end opposite the ramp.

To insert the letter 2 into the corridor 5, the letter is placed on the part of the table 7 which projects on the insertion side (the side seen on the left in figure 1), after which the letter is inserted into the corridor 5, as shown in figure 1, until it is driven by means provided for this purpose in the machine 1. The

franking mark is printed automatically while the letter 2 is driven along the corridor 5, the franked letter being expelled from the machine at the other end of the corridor 5 (the end seen on the right in figure 1).

5 For driving the letter 2, the machine 1 includes two rollers 9 and 10, each passing through an opening in the table 7, and respective pressure rollers 12 and 13 for the rollers 9 and 10, each passing through an opening in the support 6.

10 The rollers 9 and 10 are mounted so that they can rotate relative to the frame of the machine 1 through suspension means 14 shown diagrammatically in figure 1.

The pressure rollers 12 and 13 are mounted on the frame of the machine 1 so that they can rotate but are not  
15 suspended from the frame. An electric motor, not shown, is used to drive synchronous rotation of the pressure rollers 12 and 13, for example by means of a belt (not shown) running around three pulleys respectively carried by the motor, the pressure roller 12 and the pressure roller 13.

20 Because the suspension means 14 urge the rollers 9 and 10 toward the support 6, and therefore toward the pressure rollers 12 and 13, the rollers 9 and 10 are driven by friction against the pressure rollers 12 and 13, either directly or through an object passing through the machine  
25 1, such as the letter 2.

When the letter 2 is inserted into the corridor 5 in the manner shown in figure 1, it eventually encounters the roller 9 and then the pressure roller 12, which drives it in the direction indicated in figure 1 by the horizontal  
30 arrow oriented from left to right. At the same time, the roller 9 is lowered as the letter 2 is inserted between the rollers 9 and 12. The letter 2 therefore moves forward in the machine 1 with its face 4 to be printed pressed against and sliding along the surface 17 of the sliding support 6.

35 The machine 1 includes printing means 19, shown



quite diagrammatically in figure 1, for printing the franking mark in its corresponding standardized place and/or the destination address in its corresponding standardized place.

5 Generally speaking, the printing means 19 apply the franking mark while the letter 2 or the object to be franked is traveling through the machine 1 with its face to be printed pressed against the surface 17 of the sliding support 6, the printing means 19 being located between the  
10 pressure rollers 12 and 13.

In the example shown, the printing means 19 are mounted directly on the frame of the machine and are therefore fixed relative to the sliding support 6.

15 In order for the printing means 19 to be controlled synchronously with forward movement of the object in the machine, a sensor (not shown) is provided to detect the presence of the object and triggers a printing process that is then executed automatically.

20 To be more precise, a first sensor causes the motor (not shown) to be started when an object begins to be inserted into the machine 1 and a second sensor (not shown) starts the printing process when the object has reached a predetermined location.

25 Figure 2 shows an electronic control circuit of the device shown in figure 1. The circuit 100 is shown in the form of a block diagram. It includes, connected by an address and data bus 102:

- a central processing unit (microprocessor) 106,
- a random access memory (RAM) 104,
- 30 - a flash programmable read-only memory (PROM) 105,
- an input/output port 103 for receiving:
  - the weight of the postal object to be franked, and
  - detection of the postal object by each of the  
35 sensors (not shown in the drawings),

and for transmitting:

- motor control signals,

and, independently of the bus 102:

- stepper motors 109,
- presence detection sensors 110,
- a display screen 108 connected to the input/output port 103,
- scales 112 connected to the input/output port 103 and supplying bytes representing the weight of a postal object, and
- a keypad 101 connected to the input/output port 103 and supplying bytes representing successively pressed keys of the keypad.

Each of the components shown in figure 2 is well known to the person skilled in the art of microprocessor circuits and, more generally, information processing systems. Those components are therefore not described here.

The random-access memory 104 stores data, variables and intermediate processing results in memory registers which, in the remainder of the description, carry the same name as the data whose value they store. The random-access memory 104 includes in particular registers storing information representing the weight of the postal object to be franked, the format of the postal object currently being processed, the number of postal objects in the batch currently being processed, up-counter and down-counter values that correspond to franking amounts already applied and remaining to be applied before recharging the machine. The latter registers employ techniques that are known in the franking machine art (during each franking operation, if the down-counter amount is greater than the amount of the franking mark to be applied, it is decremented by the amount of that mark and the up-counter is incremented by the same amount).

The read-only memory 105 is adapted to store the operating program of the central processing unit 106, in a register labeled "program1" and the data needed for the program to execute. In particular, the following are stored  
5 in the read-only memory 105:

- values corresponding to the control registers (see test 302, figure 3), and

- addresses corresponding to a return from an interrupt in an authorized area of the program (see test  
10 303, figure 3).

The memory 105 referred to as a "random-access memory" is in fact a rewriteable non-volatile memory (i.e. it is not erased when the system is turned off). It can be rewritten only by authorized personnel using secure  
15 procedures, so that for the everyday user it is just like a read-only memory.

The central processing unit 106 is adapted to use the program stored in the read-only memory 105 and to organize the random access memory 104 in accordance with  
20 figure 3.

The software (program) of the franking machine is multitasking software, which implies allocation by the processor of a memory space (stack) in the random access memory 104 associated with each task.

25 In the embodiment described and shown, the central unit 106 is an INTEL (Registered Trade Mark) type processor of or younger than the 80386 (Registered Trade Mark) generation. A debug register enables to protect a 32-bit word. It is possible to protect larger memory areas using  
30 several identical registers.

In accordance with the present invention, a break point is allocated to data to be protected.

Note that the hardware break points and the type of unauthorized access are programmed by means of registers.

35 The latter are verified regularly to guarantee that the

protected data is still protected. The control register for the debug registers enables to specify the type of access to be controlled (read, write, execute).

Accordingly, access to protected data is detected  
5 by the microprocessor and an interrupt is executed.

During the interrupt started when access to protected data is detected, correct programming of the control registers is verified by comparing them to the reference values stored in the read-only memory 105.  
10 Whether the access in question to the protected data is authorized is also verified.

An access validity verification operation is therefore performed on each break initiated by a hardware break point allocated to protected data.

15 The current address of the instruction pointer is saved when the interrupt is invoked. In one embodiment of the present invention, the current instruction pointer address is compared with the memory addresses of functions authorized to access the protected data.

20 If the access is authorized, the access operation continues. If not, if access is prohibited or if the content of the programming registers has been modified, the error manager is immediately invoked to signal that the access was prohibited and that the content of the data is  
25 no longer valid (in the case of a write operation). In the embodiment described and shown, and in the case of write protection, this is done before the interrupt is generated.

In the case of protecting counters, the method according to the invention enables to indicate that the  
30 value of a counter has been corrupted and, in the case of a double save, it is possible to stop the application and indicate which counter is valid.

In the case of protecting an encryption or authentication key, the invention enables to detect  
35 unauthorized reading and to assure the validity of the key

and to validate a change of key.

Figure 3 shows that an interrupt is triggered when access to controlled data is detected (operation 301).

5 During the interrupt, during a test 302, the central unit 106 determines whether the control registers are programmed correctly or not by comparing values contained in them with values stored in the read-only memory 105.

10 If the result of the test 302 is positive, during a test 303, the central unit 106 determines whether the interrupt return address is in the authorized area of the program or not by comparing that address with addresses stored in the read-only memory 105.

15 If the result of either test 302 or test 303 is negative, during an operation 305, the central unit 106 invokes the error manager by trapping execution of the software to the area in the read-only memory 105 corresponding to the error manager.

20 If the result of the test 303 is positive, the current interrupt is terminated and the central unit 106 returns to the program that was being executed when access to controlled data was detected during operation 301.

CLAIMS

1. A method of protecting data in a system including a microprocessor (106) having at least one hardware break point (301), characterized in that it includes an operation of allocating a break point to data to be protected, in that it consists of instigating in said microprocessor (106) the generation of a break or interrupt (301) each time one of said protected data is accessed.

2. A protection method according to claim 1, characterized in that it includes an access validity verification operation (302, 303) at each break (301) triggered by a hardware break point allocated to protected data.

3. A protection method according to claim 1 or 2, characterized in that it includes an operation (302) of verifying the programming of the control registers at each break (301) triggered by a hardware break point allocated to protected data.

4. A protection method according to any of claims 1 to 3, characterized in that it includes an operation (303) of verifying that the interrupt return address is in the authorized area of the program at each break (301) triggered by a hardware break point allocated to protected data.

5. A protection method according to any of claims 2 to 4, characterized in that it includes an operation (305) of invoking an error manager if at least one verification operation (302, 303) gives a negative result.

6. A device for protecting data in a system including a microprocessor (106) having at least one hardware break point, characterized in that it includes means (106) for allocating a break point to data to be protected.

7. A protection device according to claim 6,

characterized in that it includes means (106) for verifying the validity of each access corresponding to a break triggered by a hardware break point allocated to protected data.

5           8. A protection device according to claim 6 or 7, characterized in that it includes means (106) for verifying the programming of the control registers.

          9. A protection device according to any of claims 6 to 8, characterized in that it includes means (106) for  
10 verifying that the interrupt return address is in the authorized area of the program.

          10. A protection device according to any of claims 6 to 9, characterized in that it includes means (106) for  
15 invoking an error manager if at least one verification means supplies a negative verification result.

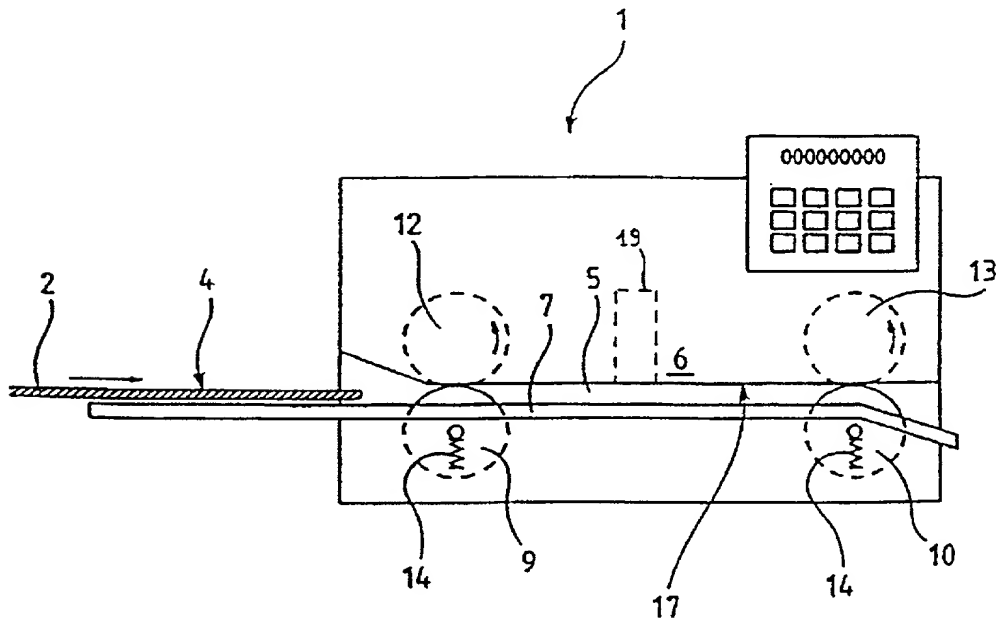


Fig. 1



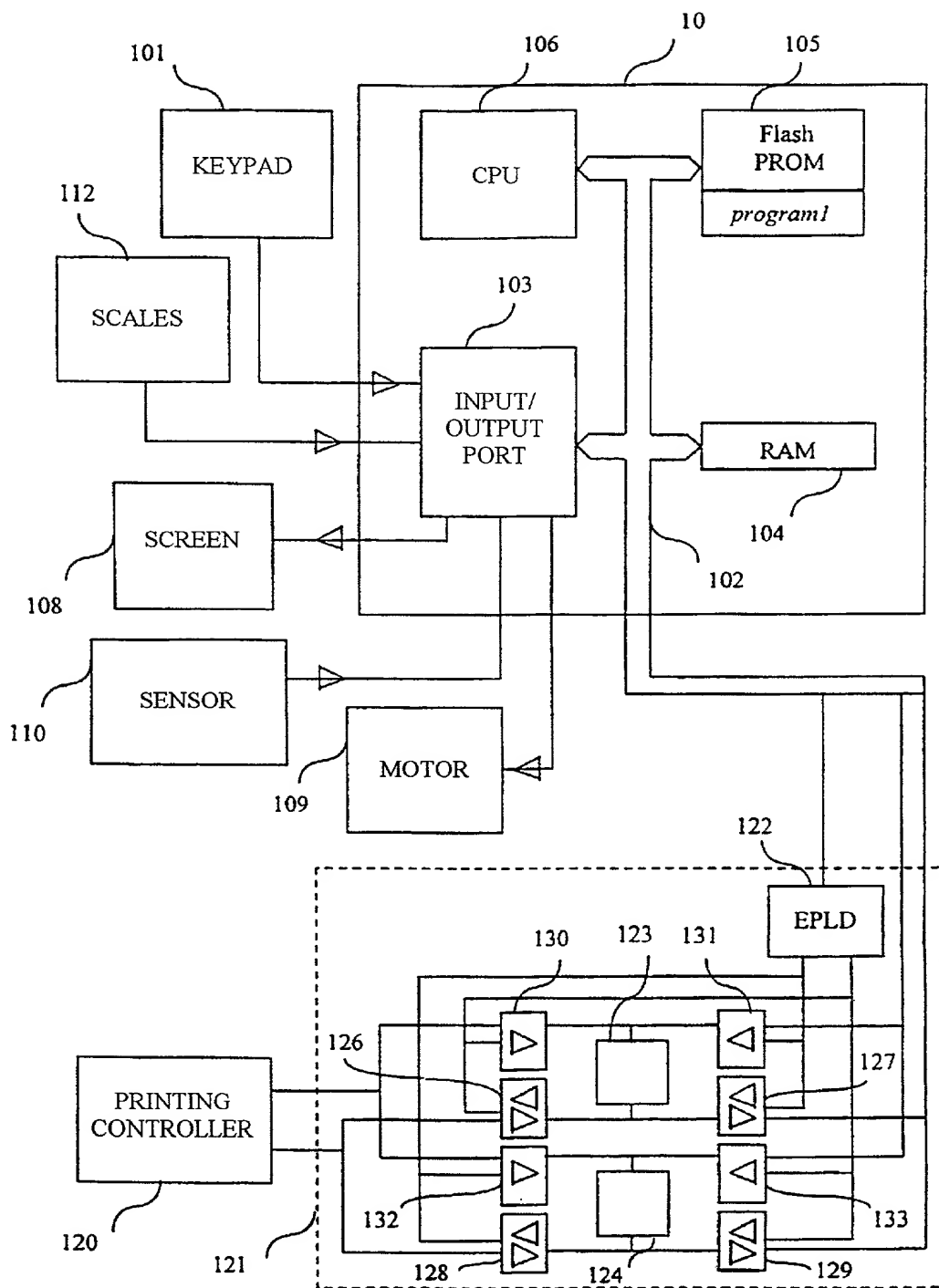


Fig. 2

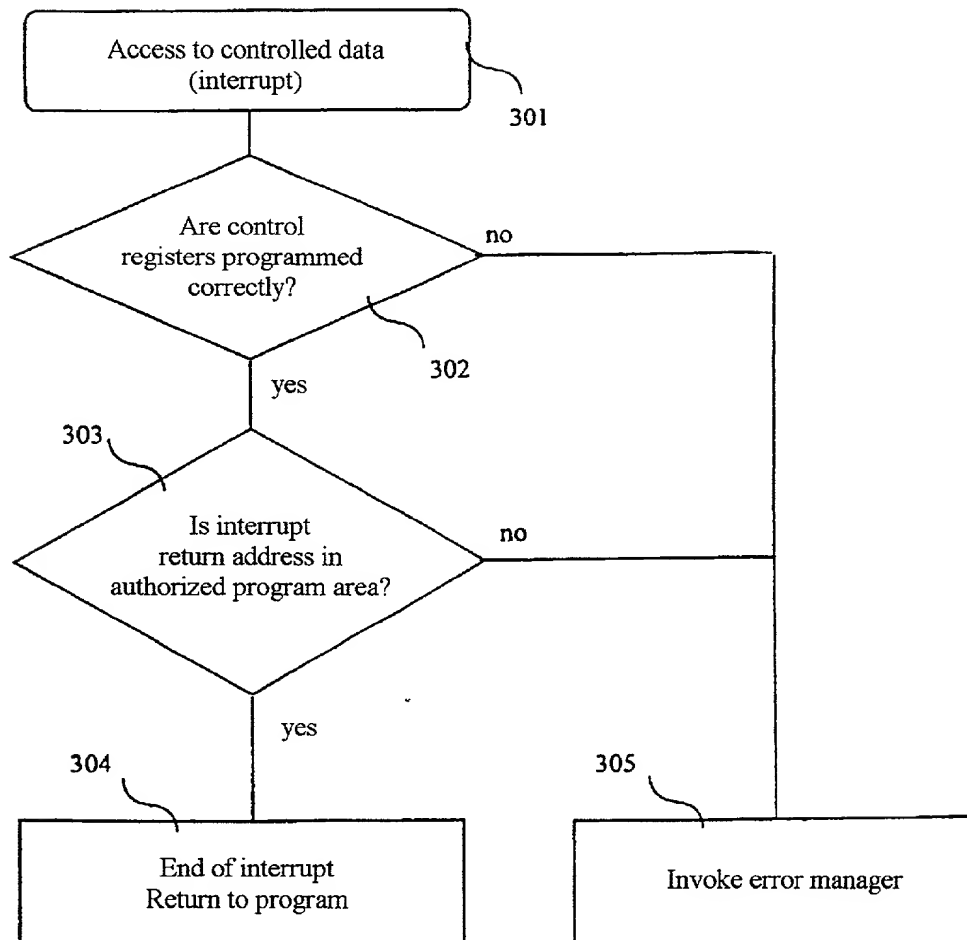


Fig. 3

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

## Declaration and Power of Attorney for Patent Application

### Déclaration et Pouvoirs pour Demande de Brevet

#### French Language Declaration

En tant que l'inventeur nommé ci-après, je déclare par le présent acte que:

Mon domicile, mon adresse postale et ma nationalité sont ceux figurant ci-dessous à côté de mon nom.

Je crois être le premier inventeur original et unique (si un seul nom est mentionné ci-dessous), ou l'un des premiers co-inventeurs originaux (si plusieurs noms sont mentionnés ci-dessous) de l'objet revendiqué, pour lequel une demande de brevet a été déposée concernant l'invention intitulée

et dont la description est fournie ci-joint à moins que la case suivante n'ait été cochée:

☐ a été déposée le \_\_\_\_\_  
sous le numéro de demande des Etats-Unis ou le  
numéro de demande international PCT  
\_\_\_\_\_ et modifiée le  
\_\_\_\_\_ (le cas échéant).

Je déclare par le présent acte avoir passé en revue et compris le contenu de la description ci-dessus, revendications comprises, telles que modifiées par toute modification dont il aura été fait référence ci-dessus.

Je reconnais devoir divulguer toute information pertinente à la brevetabilité, comme défini dans le Titre 37, § 1.56 du Code fédéral des réglementations.

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled **a memory access protection device and a method and a franking machine employing them.**

the specification of which is attached hereto unless the following box is checked:

☒ was filed on November 23, 1999  
as United States Application Number or PCT  
International Application Number  
PCT/FR99/02882 and was amended on  
\_\_\_\_\_ (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

### French Language Declaration

Je revendique par le présent acte avoir la priorité étrangère, en vertu du Titre 35, § 119(a)-(d) ou § 365(b) du Code des Etats-Unis, sur toute demande étrangère de brevet ou certificat d'inventeur ou, en vertu du Titre 35, § 365(a) du même Code, sur toute demande internationale PCT désignant au moins un pays autre que les Etats-Unis et figurant ci-dessous et, en cochant la case, j'ai aussi indiqué ci-dessous toute demande étrangère de brevet, tout certificat d'inventeur ou toute demande internationale PCT ayant une date de dépôt précédant celle de la demande à propos de laquelle une priorité est revendiquée.

Prior foreign application(s)

Demande(s) de brevet antérieure(s)

9814774 FRANCE  
(Number) (Country)  
(Numéro) (Pays)

(Number) (Country)  
(Numéro) (Pays)

Je revendique par le présent acte tout bénéfice, en vertu du Titre 35, § 119(e) du Code des Etats-Unis, de toute demande de brevet provisoire effectuée aux Etats-Unis et figurant ci-dessous.

(Application No.) (Filing Date)  
(N° de demande) (Date de dépôt)

(Application No.) (Filing Date)  
(N° de demande) (Date de dépôt)

Je revendique par le présent acte tout bénéfice, en vertu du Titre 35, § 120 du Code des Etats-Unis, de toute demande de brevet effectuée aux Etats-Unis, ou en vertu du Titre 35, § 365(c) du même Code, de toute demande internationale PCT désignant les Etats-Unis et figurant ci-dessous et, dans la mesure où l'objet de chacune des revendications de cette demande de brevet n'est pas divulgué dans la demande antérieure américaine ou internationale PCT, en vertu des dispositions du premier paragraphe du Titre 35, § 112 du Code des Etats-Unis, je reconnais devoir divulguer toute information pertinente à la brevetabilité, comme défini dans le Titre 37, § 1.56 du Code fédéral des réglementations, dont j'ai pu disposer entre la date de dépôt de la demande antérieure et la date de dépôt de la demande nationale ou internationale PCT de la présente demande:

(Application No.) (Filing Date)  
(N° de demande) (Date de dépôt)

(Application No.) (Filing Date)  
(N° de demande) (Date de dépôt)

Je déclare par le présent acte que toute déclaration ci-incluse est, à ma connaissance, véridique et que toute déclaration formulée à partir de renseignements ou de suppositions est tenue pour véridique; et de plus, que toutes ces déclarations ont été formulées en sachant que toute fausse déclaration volontaire ou son équivalent est passible d'une amende ou d'une incarcération, ou des deux, en vertu de la Section 1001 du Titre 18 du Code des Etats-Unis, et que de telles déclarations volontairement fausses risquent de compromettre la validité de la demande de brevet ou du brevet délivré à partir de celle-ci.

I hereby claim foreign priority under Title 35, United States Code, § 119(a)-(d) or § 365 (b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT International application which designated at least one country other than the United States, listed below, and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Priority Claimed  
Droit de priorité revendiqué

NOVEMBER 24, 1998  
(Day/Month/Year Filed)  
(Jour/Mois/Année de dépôt)

(Day/Month/Year Filed)  
(Jour/Mois/Année de dépôt)

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below.

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s), or § 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

(Status) (patented, pending, abandoned)  
(Statut) (breveté, en cours d'examen, abandonné)

(Status) (patented, pending, abandoned)  
(Statut) (breveté, en cours d'examen, abandonné)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

### French Language Declaration

POUVOIRS: En tant que l'inventeur cité, je désigne par la présente l'(les) avocat(s) et/ou agent(s) suivant(s) pour qu'ils poursuive(nt) la procédure de cette demande de brevet et traite(nt) toute affaire s'y rapportant avec l'Office des brevets et des marques (mentionner le nom et le numéro d'enregistrement)

Martin Fleit (Reg. No. 16,900), Richard R. Diefendorf (Reg. No. 32,390), Herbert I. Cantor (Reg. No. 24,392), James F. McKeown (Reg. No. 25,406), Donald D. Evenson (Reg. No. 26,160), Joseph D. Evans (Reg. No. 26,269), Gary R. Edwards (Reg. No. 31,824), Jeffrey D. Sanok (Reg. No. 32,169), Corinne M. Pouliquen (Reg. No. 35,753), David J. Kulik (Reg. No. 36,576) and Paul A. Schnose (Reg. No. 39,361).

Adresser toute correspondance à:

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: (list name and registration number)

Send Correspondence to:

Evenson, McKeown, Edwards & Lenahan, P.L.L.C.  
1200 G Street, N.W., Suite 700  
Washington, DC 20005-3814

Adresser tout appel téléphonique à:  
(nom et numéro de téléphone)

Direct Telephone Calls to:  
(name and telephone number)

Telephone: (202)628-8800  
Facsimile: (202)628-8844

Nom complet de l'unique ou premier inventeur	100	Full name of sole or first inventor	Jean-Marc DERY
Signature de l'inventeur	Date	Inventor's signature	Date 03/05/2001
Domicile		Residence	2, rue Liouville, 92600 ASNIERES, France
Nationalité		Citizenship	French
Adresse postale		Post Office Address	92600 ASNIERES, France
Nom complet du second co-inventeur, le cas échéant		Full name of second joint inventor, if any	Frédéric L'HOTE
Signature du second inventeur	Date 20	Second Inventor's signature	Date 3/5/01
Domicile		Residence	5, square Jean Thébaut, 75015 PARIS, France
Nationalité		Citizenship	French
Adresse postale		Post Office Address	75015 PARIS, France

(Fournir les mêmes renseignements et la signature de tout co-inventeur supplémentaire.)

(Supply similar information and signature for third and subsequent joint inventors.)